

CLAIMS

1. A polarized electric charge storage ("PECS") apparatus for operation in an AC network having an AC source and at least one load coupled to the AC source for receiving the AC signal, the PECS apparatus comprising:

at least first and second PECS devices in an anti-series configuration with one another,
the anti-series PECS devices adapted to be operably connected to the AC network and subjected to the AC signal, and
at least one DC source coupled to the first and second PECS devices for sufficiently forwardly DC biasing the devices to substantially prevent them from being detrimentally reverse biased by the AC signal.

2. The apparatus of claim 1, wherein the at least one DC source is operably coupled to the first and second devices so that the AC signal is not substantially conducted through the at least one DC source.

3. The apparatus of claim 1, wherein the anti-series PECS device configuration is adapted to be connected substantially in shunt with the AC load.

4. The apparatus of claim 1, wherein the anti-series PECS device configuration is adapted to be connected substantially in series between the AC source and the AC load.

5. The apparatus of claim 1, wherein at least one output terminal of the at least one DC source is adapted to be electrically isolated from the at least one AC source.

6. The apparatus of claim 1, wherein the at least one DC source is ungrounded.

7. The apparatus of claim 1, wherein at least one output terminal of the at least one DC source is adapted to be operably connected to an AC system ground.
8. The apparatus of claim 1, wherein the first and second PECS devices are symmetrically DC biased with respect to one another.
9. The apparatus of claim 1, wherein the first and second PECS devices are connected to each other at a DC junction node, wherein the apparatus further includes at least one AC blocking device connected between the DC junction node and a DC reference node.
10. The apparatus of claim 9, wherein the at least one AC blocking device comprises a resistor that has a sufficiently high impedance compared to the first and second PECS devices for blocking the AC signal so that it substantially passes through the PECS devices.
11. The apparatus of claim 9, wherein the DC junction node incorporates at least one AC device between the first and second PECS devices.
12. The apparatus of claim 9, further comprising an AC blocking device between the DC junction node and another node from the first and second PECS devices.
13. The apparatus of claim 9, wherein the at least one DC source includes first and second DC sources for separately biasing the first and second PECS devices.
14. The apparatus of claim 13, wherein the first DC source is substantially in shunt across the first PECS device.
15. The apparatus of claim 14 further comprising an AC blocking device operably connected between the first DC source and the first PECS device.

16. The apparatus of claim 15, wherein the second DC source is substantially in parallel across the second PECS device.

17. The apparatus of claim 16, wherein the second DC source is connected substantially in parallel across at least the second PECS device through at least one AC blocking device.

18. The apparatus of claim 17, wherein at least one terminal of the first DC source and at least one output terminal of the second DC source are ungrounded.

19. The apparatus of claim 17, wherein at least one terminal of the first DC source and at least one output terminal of the second DC source are electrically isolated with respect to the AC source.

20. The apparatus of claim 9, wherein the at least one DC source includes a first DC source having first and second output terminals for providing a DC potential, the first output terminal being coupled to the DC junction node, and the second output terminal being coupled to another node from the first and second devices.